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THE TEXTILE WORLD RECORD
KINK BOOKS

No. 1A

Kinks on Cost Finding

IN

Knitting Mills

Compiled from the
QUESTIONS AND ANSWERS DEPARTMENT
of the
TEXTILE WORLD RECORD
for its subscribers only

PRICE 75 CENTS

LORD & NAGLE COMPANY
Publishers
Boston, Mass., U. S. A.

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3. All the yarn will run off "clean," because, —

(*a*) The taper (or pitch) is correct, having been determined by exhaustive tests on a great variety of knitting machines.

(*b*) The paper cone tube has the same acute taper (or pitch) as the outer surface of a full cone, and there is no "drawing in" or "bunching" of the first few coils.

(*c*) No. 50 "Universal" machine does not make "cobwebs" or "overruns."

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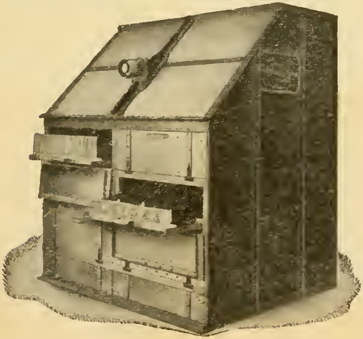

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Textile world

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PREFACE

For years the subscribers to the TEXTILE WORLD RECORD have been invited to make free use of its columns in asking questions relating to the manufacture of knit goods, and in view of the general seeking after information on knitting mill organization and costs, it occurred to us that if some of the most important and most interesting of the practical questions relating to this subject that have been answered were gathered together in a handy form for quick reference it would meet a wide-spread want.

This book contains information which has been supplied by manufacturers, superintendents, overseers and cost accountants from their private note books and their stores of knowledge gained by experience. It should be remembered that the cost of yarns, labor, supplies and other materials which enter into the cost of knit goods varies from time to time and in different localities, therefore the figures given should be taken as illustrating the method, rather than as giving the exact cost of goods under all conditions.

Many questions are answered and much information given in this book, but subscribers should remember that if there is any information they desire which is not given in this volume, it is their privilege to ask the Questions and Answers Department of the TEXTILE

World Record, and every effort will be made to publish the information for them provided the question is one of general interest to the trade.

No effort has been made to arrange the subjects in any fancied order of precedence, as each question with its answer is complete in itself. The book is fully indexed, which should enable anyone to find the information he seeks in the shortest possible time.

Grateful acknowledgment is due to the men who have supplied the information, and if Kinks on Cost Finding in Knitting Mills should benefit any of the large number of men for whom it is intended, both they and the publishers will feel that its mission has been accomplished.

TEXTILE WORLD RECORD
Lord & Nagle Company
Publishers

KINKS ON
COST FINDING IN KNITTING MILLS

Cost of Manufacturing 200-Needle Half Hose

I am about to start in the hosiery business and would like an estimate of the cost of manufacturing 200-needle half hose, using a lisle yarn.
Allen (1043).

It is a very difficult matter to estimate the exact cost of any article without being acquainted with the existing conditions, such as location, equipment, labor supply, capacity of mill, etc. The capacity of the mill has considerable bearing on the cost of manufacture. The larger the capacity the less the rate of mill expense will be per dozen. I will endeavor to present a system by which it is possible to figure the exact cost per dozen of any grade of hosiery regardless of the size of plant. In large mills it is usually desirable to know the cost of operating each department and for this purpose we will classify each department separately, taking up each operation, and every item bearing on the cost of the article. In the knitting department we find the following items of expense:

(1) Kind of yarn, 2-40s.
    Price of yarn per pound.
    Weight of yarn per dozen.
    Total cost of yarn.
    Knitting ribbed tops.
    Cutting ribbed tops.
    Topping per dozen.
    Transferring per dozen.
    Waste.
    Handling and superintendent.

(2) Looping Department.
    - Turning per dozen.
    - Looping per dozen.
    - Mending per dozen.
    - Hemming per dozen.

(3) Dyeing Department.
    - Turning per dozen.
    - Singeing per dozen.
    - Dyestuffs per pound or dozen.
    - Drying.
    - Superintendent and handling, per dozen.

(4) Finishing Department.
    - Turning per dozen.
    - Boarding per dozen.
    - Pressing per dozen.
    - Brushing per dozen.
    - Mating per dozen.
    - Stamping per dozen.
    - Ticketing per dozen.
    - Folding per dozen.
    - Boxing per dozen.
    - Handling and Superintendent.

In addition to these we must add the following items of general expense:

Per dozen.
- Fuel.
- Power.
- Oil.

Office.
Taxes.
Repairs.
Insurance.
Lights.
Supplies.
Express.
Advertising.
Selling.
Miscellaneous.

It would be impossible in an article of this kind to give the cost of each of the above items, or the cost of the yarn for different years. Local conditions will have much to do with some of them. I will give prices of different operations in the various departments and in this way give a close estimate of the cost of manufacture of the goods.

I find a 2-36s to 2-40s lisle would give better results on this gauge work, and the goods will finish 14 ounces per dozen. We will assume the yarn will average about 35 cents per pound. Using this as a basis we find the cost as follows:

	Per dozen.
Cost of yarn	$0.31
Knitting ribbed tops	.005
Cutting ribbed tops	.005
Topping ribbed tops	.07
Transferring ribbed tops	.045
Waste	.04
Looping	.06
Turning	.005
Mending	.03
Turning second time	.005
Dyeing	.11

Turning two times	.01
Boarding	.02
Pressing	.01
Mating	.02
Stamping	.005
Ticketing	.005
Folding	.01
Box and Boxing	.05
Total	$0.815

The above practically includes all the actual expense of manufacture, but to this must be added the following miscellaneous items:

Per dozen.
- Seconds.
- Fuel.
- Power.
- Oil.
- Office.
- Taxes.
- Repairs.
- Insurance.
- Lights.
- Supplies.
- Express.
- Freight.
- Advertising.
- Selling.
- Miscellaneous labor about mill.
- Superintendent.

This will bring the actual cost to about $1.31 per dozen.

In order to find the cost on each of the above miscellaneous items it would be necessary to keep a separate account of the amount paid out and the rate of each based on the production for one year.

The item classed as "superintendent and handling" includes all of the regular day workers' wages, including superintendent and overseers. In a small mill this item is often reduced to a very low figure by having one overseer look after several departments. Merrill.

Cost of Manufacturing 200-Needle Half Hose

We were extremely interested in Merrill's answer on the cost of 200-needle half hose on page 683 of the March issue (given in the preceding question and answer). We would like to ask the author of this article a few questions as follows:

Is not 11 cents rather high for dyeing one pound half hose? We would also like to know what part of the cost of the miscellaneous items is charged to selling expense? The total cost of these items is 49½ cents. In this case would 15 cents cover the selling cost, leaving 34.5 for mill expenses? In figuring our cost we figure the cost in the warehouse and then add to it the cost of selling, as we do not want to include selling cost in our inventory figures.

We understand of course that the cost of selling varies in different organizations, but what we would like to know is, in these figures what is the actual mill expense and what is the selling expense? Jefferson (1071).

Eleven cents per pound is somewhat high for dyeing black. However in figuring costs I have always made it a practice to figure a little high as I would rather have the actual cost price a little too high than too low. In a mill of a large capacity and which manufactures a great number of different styles it is a very difficult matter to figure the exact cost, as no matter how complete a cost system may seem there are always some items of costs which are sure to be overlooked. I have known managers to use their cost system as a basis for figuring their profits from month to month on actual goods sold, and in such cases almost invariably the cost has been found too low and the expected profits failed to materialize when the regular inventory is taken at the end of the fiscal year. For this reason I have found it advisable to figure a little high.

In regard to actual cost of dyeing, will say that the cost will run from 6 to 11 cents per pound, according to facilities and capacity of dye house. The method of dyeing used will also have considerable to do with cost of same. Many of the larger companies have their own secret process of dyeing, and some of them have been able to reduce the cost to as low as $4.50 per hundred pounds. This, however, is an exception and is found to be impossible on the part of the small manufacturer owing to the fact that the large salaries demanded by dyers having their own secret process will increase rather than decrease the actual cost in a mill of small capacity.

As regards the cost of selling, this depends largely upon the method used for disposing of goods. Some manufacturers have no regular salesmen, disposing of their goods direct to jobbers. Others depend largely on advertising and selling direct by mail order system, while others sell direct to the trade. In the article in the March issue I figured the cost of selling at 10 per cent. of the selling price. At the present time we are manufacturing goods similar to the class of goods you are seeking information on, and the actual cost price of same is $1.37. The selling price is $2.10. We figure our selling cost at 10 per cent., or 21 cents per dozen on this class of goods, thus leaving 28½ cents as mill expense. Merrill.

Cost Accounting for Knitting Mills

We make a number of lines of goods and have considered installing a cost system which would give the cost of each line and the profit from it, but before going into the matter I want to know just what it would do and how it would do it. Any information you can give me on this, or an example of a system and the results will be appreciated. Brown (1763).

We would recommend that "Brown" study the explanation of cost accounting by J. Lee Nicholson, author of "Factory Organization and Costs," and president of the American Cost Accounting Co., which follows:

Factory cost accounting should be devised in such a manner as to show not only the cost of the final product, but also to give unerring indication of the exact working conditions and efficiency of all departments.

The cost of production and operation should be accurately known and should be properly tabulated, so that it may be compared with previous and subsequent costs. In this manner any variation in the cost of manufacture is immediately determined, and any economy that may be necessary is at once brought to the attention of the executive, who is thus enabled to acquaint himself with all the details of the factory, to be fully conversant with the labor and material cost, and to know from day to day the results and profits of his business.

The man with an efficient cost system is working in clear daylight while the one with a defective system, or without any, is groping in the dark and the advantage gained by the former is so great that it almost assures success from the outset.

It is not only necessary to know the total cost of the article manufactured, but the cost of each operation as well. This cost should include all factory expenditures, such as material and supplies, direct and indirect labor, department indirect expenses, general factory expenses, maintenance and depreciation and, in fact, all expenses of whatever description and kind that are connected with the plant. All indirect expenses, properly chargeable as cost of production, should be distributed according to actual expenditures and not according to past experience, as is usually done.

The cost records should clearly indicate the efficiency or inefficiency of all operating departments and should make it possible to prevent waste, shop errors, loss of time, or negligence on the part of employees.

It is advisable in many manufacturing establishments to have the cost records show the efficiency of the machinery. The cost record should show what it costs to maintain and operate each machine, as well as the capacity and working efficiency of each, in order that a proper record of production may be obtained. These records should be so arranged as to indicate whether the machines are 40, 50, 80 or 100 per cent. efficient. By this means, the decreased production is at once brought to light and the capacity of the plant maintained.

By supporting machine records with time records, the cost of operation may be obtained in such a way as to make it possible to operate most all departments on piece work prices based on comparative machine costs.

It should be remembered that with decreased production, indirect expenses remain practically the same, but being distributed over a lesser output, the cost of production is increased.

Many factory men think that while this principle applies to machine costs, or even in those cases where labor is paid upon a day basis, it would not apply in those cases where labor is paid upon a piece work basis. They neglect to note that while their direct labor cost is so much per article and does not vary, that their indirect expenses are not reduced materially by a decrease in production, and that, therefore, when these expenses are charged over a smaller output, that the charge against each article is increased, or in other words—that the article then costs more.

Indirect charges run from 50 to 300 per cent. of the direct charges, varying according to the class of business.

There are perhaps more mistakes made in applying indirect expenses than in any other elements connected with the finding of costs. The usual method of adding a certain percentage upon every article manufactured to cover all indirect cost is wrong in principle. The principal elements in indirect charges are department indirect, department supplies, general indirect and general supplies.

The accurate cost of any article cannot be known unless the indirect expenses are handled under these divisions, for instance, some departments have more indirect expenses than others. One department may demand more floor space than another. The number and salary of foremen may be greater in one department than in another. And in the same manner, such items as indirect labor, power and supplies vary considerably in the different departments.

Then again, all articles do not pass through all of the operating departments, and the charge for indirect expenses varies accordingly.

For the sake of illustration, let us suppose that there are a certain number of operating departments in a factory, say five. A certain class of product passes through all five of these operating departments. Another class of product passes through but three of them. It is evident that by charging a fixed percentage for indirect expenses on all articles, that the product which passes through only three departments is being charged the same as the product which passes through all five departments. In other words, the indirect expenses of the two departments through which this product does not pass are being charged up against the cost, the same as if it had.

By this, it can clearly be seen that unless indirect is applied (1) by departments, and then by general indirect, that the accurate cost cannot be shown, for, unless this is done, some articles will be charged with more than they should be and some with less than they should be.

In order to give a clearer insight into the methods of accounting for cost keeping, I will quote you classifications from an operating ledger and general ledger in a textile plant.

Under the general classification "Factory Expenditures," the operating departments would be

Sorting
Scouring
Carbonizing
Dyeing
Picking
Carding
Spinning
Knitting
Rib knitting
Seaming
Boarding
Finishing
Packing
Box department

The cost of operating each of the departments and the cost of each process through which an article passes is determined. And this cost includes not only the prime material cost and direct labor cost, but also all indirect expenses chargeable against each separate department. Such expenses would be as follows:

Indirect labor
Supervision
Supplies
Light, heat and power
Maintenance
Rent
Incidentals

In addition to the expenses which should be charged against one department or another, there will be certain expenditures which are somewhat general in their nature and must be charged against all departments. To the department expenses, as stated before, there must, therefore, be added the pro-rata share of each department in these general indirect expenses, which are as follows:

Superintendent
Light, heat and power
Supplies
Freight, express and cartage, inward
Insurance
Taxes
Maintenance
Telegraph and telephone
Postage, printing and stationery
Salaries of office clerks
Factory office supplies
Incidentals
Depreciation

The product of such a plant would be classified as follows:

Men's garments
Ladies' garments, and
Children's garments.

Each of these classifications would in turn be subdivided. For example, the subdivisions under men's garments would be:

Natural wool — mottled
Natural wool — mixed
Fine natural wool — mixed
Coarse natural wool — mixed
All wool — natural
Fine camel hair
Coarse camel hair
All wool camel hair
Plush — natural
Plush — solid colors
Miscellaneous

The sales in each of these subdivisions, together with the cost of sales and the gross profit, would be shown.

Against the gross profit would be charged all selling and administrative expenses. The "selling" expenses would include.

Advertising
Traveling expense
Freight, express and cartage, outward
Commission
Salaries of salesmen

and the "Administrative" expenses would include

Salaries of general officers
Legal expenses
Salaries of general office clerks
Interest
Merchandise discount
Postage, printing and stationery
Telegraphing and telephoning
Depreciation of fixtures and furniture
Insurance
Doubtful accounts
Incidentals

Statement of Profit and Loss *For the Month ending May 31, 1906*

DEPARTMENTS	SALES		GROSS PROFIT		EXPENSES						NET PROFIT	
	Amount	Cost	Amount	%	Selling	%	Adm've	%	Total	%	Amount	%
A	$24,065.33	$22,864.51	$1,200.82	5.2	$1,177.52	5 15	$1,214.95	5.4	$2,392.47	10.5	$1,191.65	5.2
B	6,933.77	4,990 20	1,943.57	39.0	256.99	"	269.47	"	526.46	"	1,417.11	28.2
C	165.78	180.47	14.69	8.1	9.29	"	9.74	"	19.03	"	33 72	18.3
D	103.51	178.60	75.09	42.1	9.20	"	9.64	"	18.84	"	93.93	53.0
E	6,810 63	4,328.86	2,481.77	57.3	238.79	"	233.76	"	472.55	"	2,009.22	46.2
F	825.97	563.31	262.66	57.3	29.01	"	30.42	"	59.43	"	203.23	36.0
G	4,495.36	2,829.92	1,665.44	46.7	145.75	"	152.82	"	298.57	"	1,366.87	48.3
H	716.06	862.15	146.09	17.0	44.40	"	46.55	"	90.95	"	237.05	27.5
I	19 03	4.65	14.38	31.9	.23	"	.25	"	.48	"	13.90	325.0
J	416.41	304 42	111.99	37.0	15.69	"	16.42	"	32.11	"	79.88	26.0
K	13.69	10.73	2.96	27.0	.55	"	.58	"	1.13	"	1.83	17.0
L	121.19	98.91	22.28	22.5	5.10	"	5.33	"	10.43	"	11.85	12.0
Total from Operating	$44,686.73	$37,216.73	$7,470.00	20.1	$1,932.52	5.15	$1,989.93	5.4	$3,922.45	10.5	$3,547.55	9.5
All other Inc. & Exps.												
Commissions			556.49								556.49	
Miscellaneous			917.04								917 04	
From all Sources	$44,686.73	$37,216.73	$8,943.53	.240	$1,932.52	5 15	$1,989.93	5 4	$3,922 45	10 5	$5,021.08	.135

The balance obtained by deducting these expenses from the gross profit would give the net profit or loss upon each class of the product.

I call your attention to a printed profit and loss statement, which is shown herewith on the opposite page. This statement is an actual copy of a profit and loss statement taken from the private ledger of a manufacturing establishment where a complete cost system is in use and such a statement is taken monthly from their books.

Under the classification "Departments," A, B, C, D, etc., represent the selling departments according to the various classes of product manufactured.

Under the general classification "Sales," the "Amount" column represents the sales of those different products for the month, and under the classification "Cost," the figures represented are actual costs of those classifications. This cost includes all factory expenses of every description and kind.

The "Amount" column, under "Gross Profit," shows the factory profit or loss. The figures underlined represent losses and the other figures represent profits.

Under "Expenses" is shown the selling and administrative expenses and the total of both, and under the caption "Net Profit" is shown the actual profit or loss by department, underlined figures representing losses.

This statement was the first monthly profit and loss statement after the cost system was installed, and I wish to state from my own personal knowledge, that all underlined figures in the column headed "Net Profit" have since disappeared from the succeeding monthly statements.

I call your attention to the amount "$5,021.08" being the net profit of the business for the month. This figure is what would have been shown had an inventory been taken and the books closed in the old fashioned way, and, generally speaking, was quite satisfactory to the officers of the company.

There are many who are unaware of the fact that one or two profitable departments of their factory are paying the losses of others that for one reason or another are not netting expenses. They are satisfied with the combined profits, which are small, not realizing that the large profits, which they are actually making, are used to pay the heavy losses of certain mismanaged departments of their business. It should be borne in mind that it does not require a thorough system to stop a leak that is apparent without any system, but it does require a good system to detect the invisible, yet never ceasing drip that wears out the foundation stone of a great business.

The profit and loss statement, previously referred to, shows how some departments are paying the losses of others. In this particular instance, the class of product manufactured under department "A" represented over half of the product of the plant, and this department was always supposed to have been run at a profit until the cost system was introduced. The fact was shown, however, that it was operated at a loss.

Department A moreover was the department in which the sales were being pushed, as it was believed that it was here that the profits of the business were made. Department E and Department G, which were really the money makers, were comparatively neglected. One of the results of this information, which could only have been obtained by means of a cost system, was that the efforts of the salesmen were thereafter directed towards increasing the sales in departments E and G, and the profits of the business for the following months showed increases which were gratifying to the officers of the company.

At the same time steps were taken to correct the conditions which were shown to have existed in Department A.

The chief value of a cost system in this particular instance was the analyzed records from which the costs were made up and which appear in total on this statement.

It does not mean that everything in department A was made at a small loss, as many articles in that department were made at a good profit, but it does mean that the loss on certain articles more than counterbalanced the profit made on others and the particular value of the cost system was that it was possible to turn to the figures that composed the cost of $22,864.51 and learn just what articles were made at a profit and just what articles were made at a loss, and the reason why.

Where does profit end and loss begin? The commercial success of a business depends upon the answer, and that answer is found in the solution of the problems of cost accounting.

Cost of Yarn in Knit Goods

Please explain the method of finding the cost of yarn in knit goods under the following conditions:

1. Goods 7 lbs. to the dozen.
   Yarn: 1-3 at 60 cents per lb.
   2-3 at 25 cents per lb.
2. Goods 6½ lbs. to the dozen.
   ¼ at 38 cents per lb.
   1-8 at 80 cents per lb.
   1-8 at 90 cents per lb.
   ½ at 28 cents per lb.

Cana (1029).

The cost of the material in the goods depends upon the waste made in knitting. This must be estimated as closely as possible. Assuming it to be 5 per cent., the method of calculation is as follows:

1. 1-3 yarn at 60c. = $0.20
   2-3 yarn at 25c. = .16 2-3
   ----
   1 $0.36 2-3
   $0.36 2-3 × 7 = $2.57
   $2.57 ÷ .95 (100% — 5%) = $2.70,
   cost of yarn per dozen.

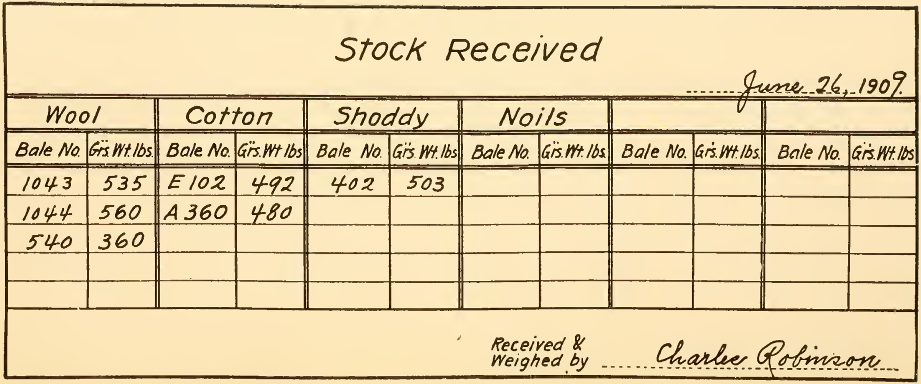
2. ¼ yarn at 38c. = $0.095
1-8 yarn at 80c. = .10
1-8 yarn at 90c. = .112
½ yarn at 28c. = .14
1 $0.447
$0.447 × 6½ = $2.91
$2.91 ÷ .95 (100% — 5%) = $3.06,
cost of yarn per dozen.

An Order and Cost System for an Underwear Mill

Since the enlargement of our mill some months ago we have felt the necessity of an order and cost system. We want a system which does not involve too much clerical labor or "red tape" but which will gather the necessary information from various departments in a simple and direct manner. Can you get this for us?

Chase (1758).

The accompanying forms illustrate a system for keeping track of the stock in process, and include the method for arriving at the actual cost of manufacture in each of the several processes from the raw material to the finished goods. Some are for order forms in the departments. Forms for fixed charges, such as office expenses, rent, power, insurance, interest, commissions, etc., are not included. As the system will give the total production of goods for each department the system will apply to mills that buy yarn, by changing the "Stock Received" form into "Yarn Received" and omitting the other forms up to the knitting room.



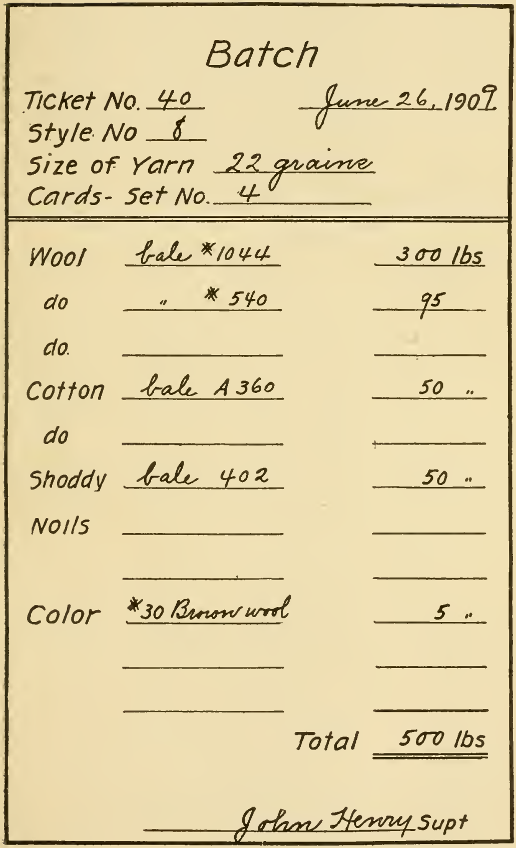
Stock Received

June 26, 1909.

Wool		Cotton		Shoddy		Noils					
Bale No.	Grs. Wt. lbs.	Bale No.	Grs. Wt lbs	Bale No.	Grs. Wt. lbs	Bale No.	Grs. Wt. lbs.	Bale No.	Grs. Wt. lbs.	Bale No.	Grs. Wt. lbs
1043	535	E 102	492	402	503						
1044	560	A 360	480								
540	360										

Received & Weighed by Charles Robinson

FIG. 1



Batch

Ticket No. 40 June 26, 1909

Style No 8

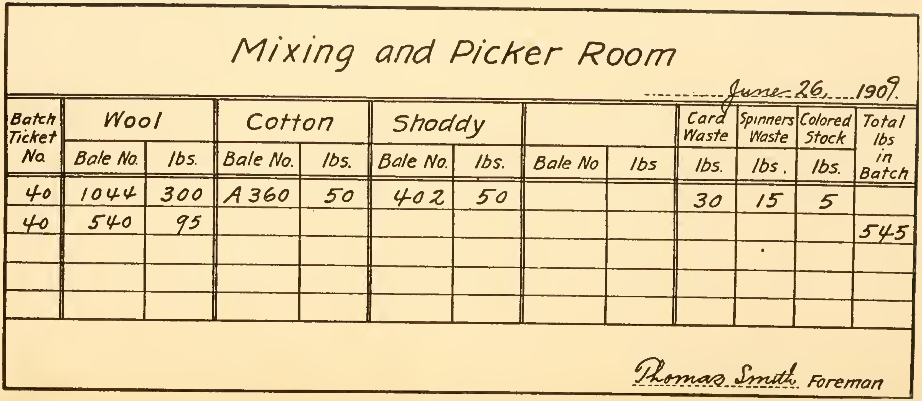
Size of Yarn 22 grains

Cards- Set No. 4

Wool	bale *1044	300 lbs
do	" *540	95
do.		
Cotton	bale A360	50 "
do		
Shoddy	bale 402	50 "
Noils		
Color	*30 Brown wool	5 "
	Total	500 lbs

John Henry Supt

FIG. 2



Mixing and Picker Room

June 26, 1909.

Batch Ticket No.	Wool		Cotton		Shoddy				Card Waste	Spinners Waste	Colored Stock	Total lbs in Batch
	Bale No.	lbs.	Bale No.	lbs.	Bale No.	lbs.	Bale No	lbs	lbs.	lbs.	lbs.	
40	1044	300	A 360	50	402	50			30	15	5	
40	540	95										545

Thomas Smith Foreman

FIG. 3

The forms are intended also to be a daily record of production of each department, and as these are sent into the office each morning the superintendent is thus informed as to the daily production of the mill in each process.

If desired, a percentage to cover the fixed charges can be added to the manufacturing cost of each department and thus give the total cost of yarn ready for the knitting room.

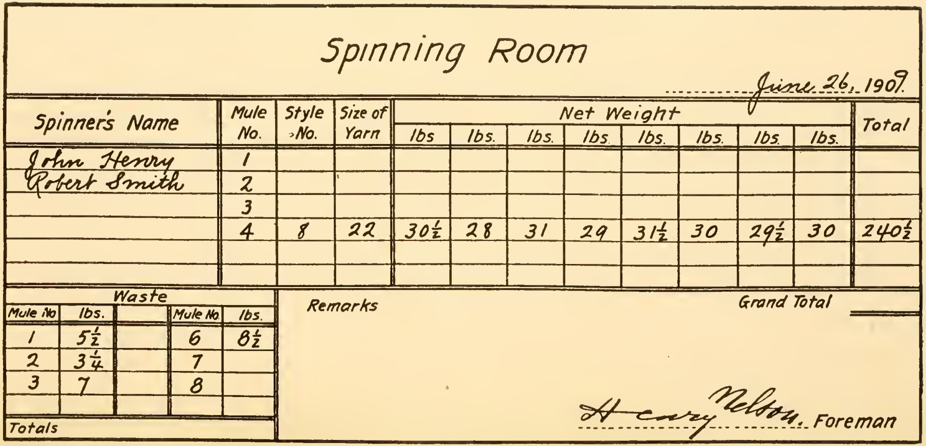
The form at Fig. 1 is for the record of stock received each day. The items tabulated in the stock form will be shown later. Fig. 2 is the superintendent's order form for the batch and covers the quantities of each kind of stock. These forms should be retained by the boss picker man or by the boss carder.

From this form the foreman of the picker room fills out daily the form at Fig. 3, adding the amount of card and spinner's waste of this particular batch of stock that will go back into it.

From form Fig. 3 the "Used" column in form Fig. 15 is filled.

Fig. 4 is for use in the spinning room. This form answers not only for a daily record of production, but also as a record for the pay roll. It is also a daily record of the amount of waste made in spinning.

Fig. 5 is a record of yarn received from the spinning room; it also acts as a check upon the form at Fig. 4, when the latter is used for the pay roll.



Spinning Room

June 26, 1909.

Spinner's Name	Mule No.	Style No.	Size of Yarn	Net Weight lbs	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	Total
John Henry	1											
Robert Smith	2											
	3											
	4	8	22	30½	28	31	29	31½	30	29½	30	240½

Waste

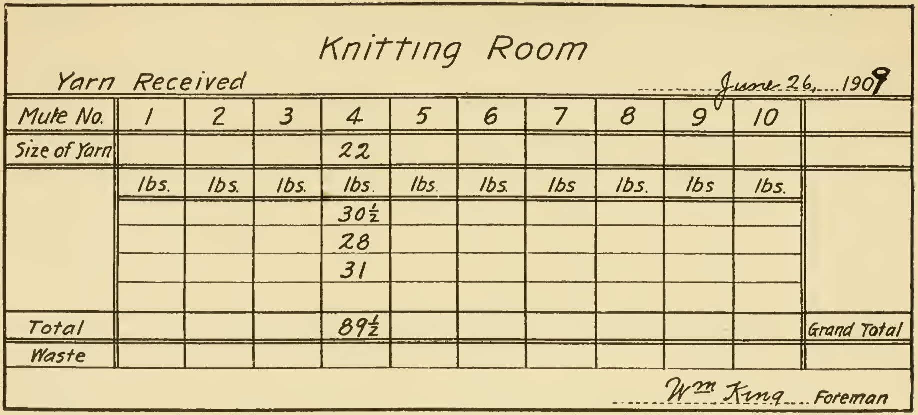
Mule No	lbs.		Mule No.	lbs.
1	5½		6	8½
2	3¼		7	
3	7		8	
Totals				

Remarks

Grand Total

Henry Nelson. Foreman

FIG. 4



Knitting Room

Yarn Received ....June 26, ...1909

Mute No.	1	2	3	4	5	6	7	8	9	10	
Size of Yarn				22							
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs	lbs.	lbs	lbs.	
				30½							
				28							
				31							
Total				89½							Grand Total
Waste											

............Wm King.... Foreman

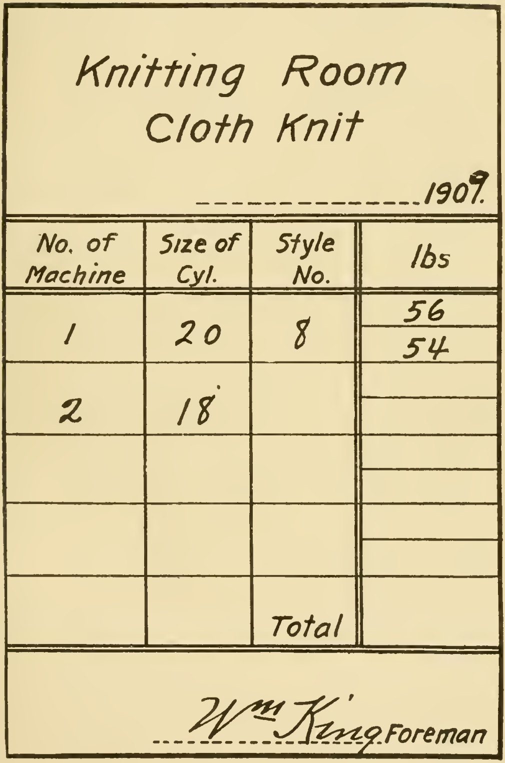
FIG. 5

Fig. 6 is a record of cloth knit, and gives the daily production. Each roll of cloth is tagged with number of the machine, size or diameter of cylinder, style number and weight in pounds. This form also answers for compiling the pay roll of knitters where they are paid by the piece, as each knitter can be designated by a machine number. These tags placed on the rolls of cloth in the knitting room are to be replaced after the cloth is washed or dyed and then dried.

The rolls being tagged with the numbers of the machine and size of cylinder, the boss knitter can locate any machine that is not making good cloth, should bad work be found when cutting. The size of the cylinder is necessary for the dry room, so as to have the roll dried the proper width.

When different sizes of rolls are washed or dyed together, a system of knotted strings can be used to designate the sizes, and tags marked accordingly, so as to ensure each roll being replaced with the tag first placed on it in the knitting. If defects are found in the cloth when being cut, the knitter is able to locate the machine and operator responsible for it.

Fig. 7 is for a daily record of cloth cut. It shows the number of dozens cut, shrinkage of cloth, the weight of the goods as cut, and the waste from each roll. Necessary waste is defined as the waste which cannot be avoided, such as the V pieces made by cutting the drawers, and the waste in cutting the sleeves. The un-



Knitting Room
Cloth Knit

..............1909.

No. of Machine	Size of Cyl.	Style No.	lbs
1	20	8	56 54
2	18		
		Total	

Wm King Foreman

Fig. 6

CUTTING ROOM

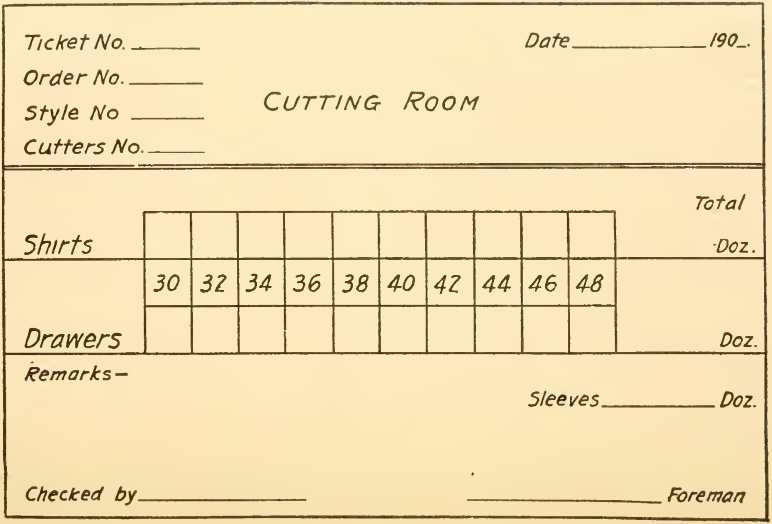
Order	Ticket	Style	Machine	Lbs	Lbs	Shrinkage	Size of	Size	Shits	Drs	Sleeves	Necsry	Unnecsry	Total	Wt per doz		Remarks
No.	No	No	No	Knit	Dried	lbs	Cyl.	Cut	Doz.	Doz	Doz	waste-lbs	waste-lbs	waste-lbs	lbs	ozs	
																	Cut from unnecessary waste
																	Gussets & Seats ____ lbs Double Breasts ____ lbs Total ____
																	____ Foreman

Fig. 7

necessary waste is that caused by defective knitting, which would have gone into goods instead of into waste if the knitting had been perfect. As the waste item in a mill is very important, a careful study of these two columns by the superintendent and boss knitter aids in keeping this item down to a minimum.

The forms shown at Figs. 8, 9 and 10 are for a record of the quantity of each size of shirts and drawers, and are made out in triplicate from the office by using carbon paper, as they represent orders to the different departments. These forms should call only for the quantity to be packed in one case with the assortment of sizes as wanted. Fig. 8 goes to the cutting room; Fig, 9 to the finishing room; Fig. 10 to the shipping room. Fig. 9 is the order for the foreman of the cutting room. As several rolls of cloth will be required to fill a single case order the foreman numbers each order on a ticket, and then issues to each cutter a separate written order bearing the ticket number and the number of dozens to be cut of a certain size out of certain sized rolls of cloth. As fast as these goods are cut they are placed together according to their respective ticket numbers, and when the whole of the order, as called for on the form at Fig. 8 is cut, the goods are placed in a truck or basket, the form, Fig. 8, attached to it, and sent to the finishing room. When received there the goods are first checked off to make sure the quantities are correct, then the form at Fig. 9 is attached to Fig. 8 and the goods are ready to be finished. Each order as it goes through the several processes should be returned to the truck or basket and passed along the room until all operations are completed, then sent to the shipping room to be boxed and packed. The shipper uses the form shown at Fig. 10. When the goods are shipped, Figs. 8, 9 and 10 are returned to the office together.

Any shortage in the order from the cutting room should be made up before the goods are started in the finishing process, Any shortage after finishing should be made up by a replace order, giving reasons why the order is short. The replace orders sent to the cutting room indicate the number of seconds made. All goods received in the finishing room, Fig. 8, should when checked be examined for seconds before finishing. They should again be examined



Ticket No. ______ Date ____________ 190_.

Order No. ______

CUTTING ROOM

Style No ______

Cutters No. ______

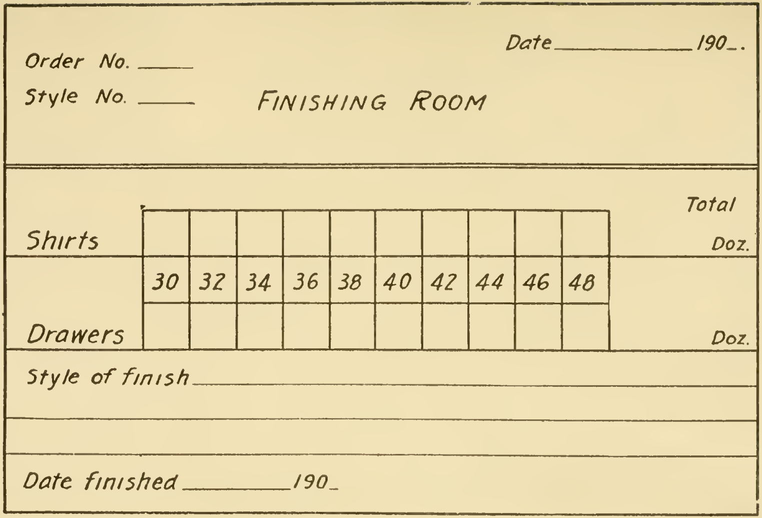
Shirts											Total Doz.
	30	32	34	36	38	40	42	44	46	48	
Drawers											Doz.

Remarks–

Sleeves __________ Doz.

Checked by ____________ ____________ Foreman

FIG. 8



Date ____________ 190_.

Order No. ____

Style No. ____

FINISHING ROOM

Shirts											Total Doz.
	30	32	34	36	38	40	42	44	46	48	
Drawers											Doz.

Style of finish ____________________________

Date finished ____________ 190_

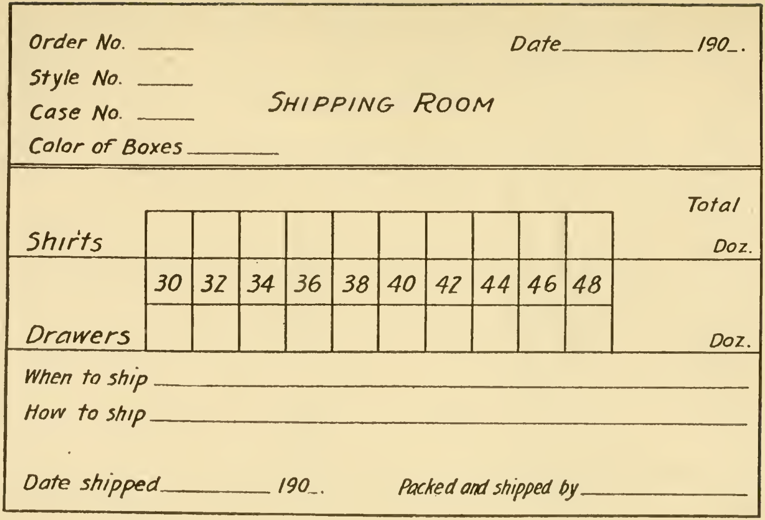
FIG. 9

for seconds before being sent to the shipping room, so as not to delay shipments, which would be the case if seconds were discovered when being folded.

Fig. 11 is for a daily record of goods finished and shows the production of the finishing room in dozens. The name of each shirt or drawer finisher is put down. Fig. 12 is for a record of production in the dry room, showing the number of pounds of cloth dried each day. This is tabulated in the column at Fig. 13. From this weight and the amount paid to employees in the wash and dry room, shown at Fig. 14, the cost per pound for washing and drying is calculated.

Fig. 15 is for a record of stock received and used. It can be kept in the form of a book. It enables every bale of raw material to be traced, showing whether it has been used or not. From this book the amount of stock on hand can be verified. The cost per pound for handling the stock is also found from Fig. 15. The size of the form should be adapted to the business of the mill.

Fig. 14 is a pay-roll form. This record should be subdivided with the names in each department as shown so as to keep the labor cost separate. Fig. 16 is for a summary of the business and should be kept in a book. A record of one month can be put on one page, or the book made smaller for a shorter period. The totals from the pay roll form Fig. 14, for each of the several departments are tabulated there



Order No. ______ Date____________190_.
Style No. ______
Case No. ______

SHIPPING ROOM

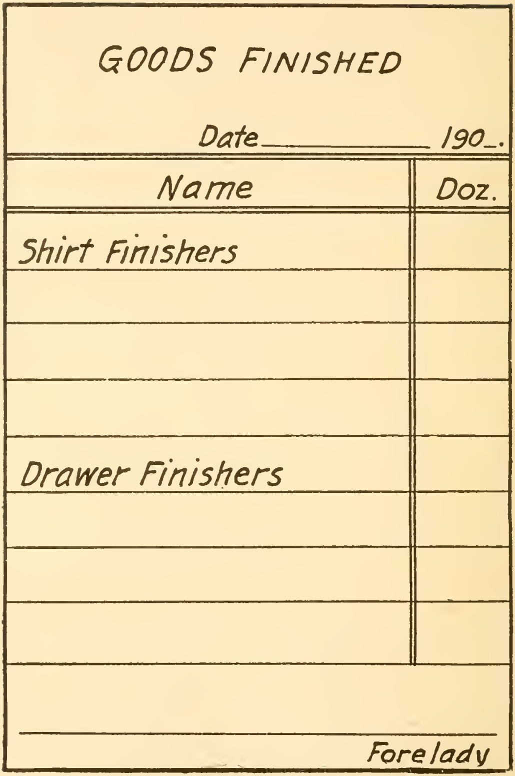
Color of Boxes ________

Shirts											Total Doz.
	30	32	34	36	38	40	42	44	46	48	
Drawers											Doz.

When to ship ________________________
How to ship ________________________

Date shipped___________190_. Packed and shipped by______________

FIG. 10



GOODS FINISHED

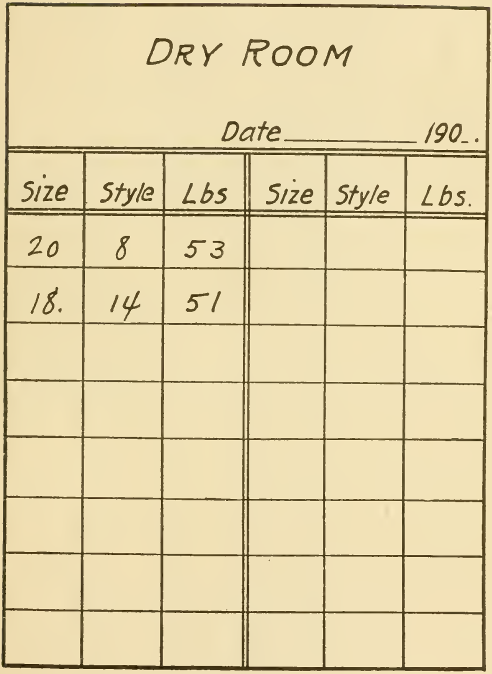
Date__________ 190_.

Name	Doz.
Shirt Finishers	
Drawer Finishers	

____

Forelady

Fig. 11



DRY ROOM

Date ____________ 190_.

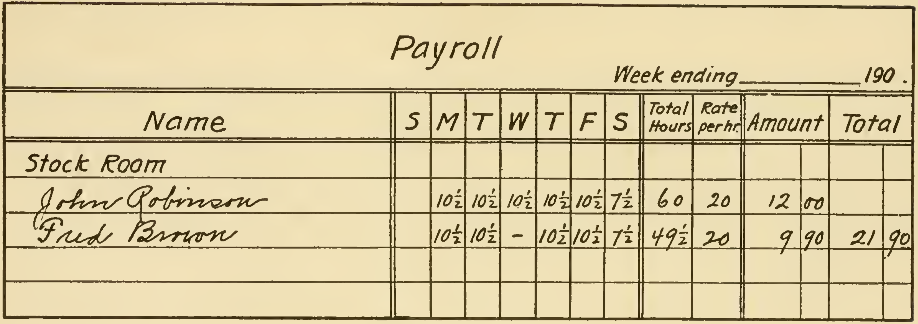
Size	Style	Lbs	Size	Style	Lbs.
20	8	53			
18.	14	51			

FIG. 12

Month of__________ 190_.

Day	Picking & Carding Total lbs.	Yarn Spun Total lbs.	Cloth Knit Total lbs.	Cloth washed dyed.dried Total lbs.	Goods cut Total doz.		Goods finished Total doz.		Goods shipped Total doz.	Remarks
					Sh'ts	Dr's	Sh'ts	Drs.		
Totals										
Payroll for mo.										
Cost per lb or doz										

FIG. 13

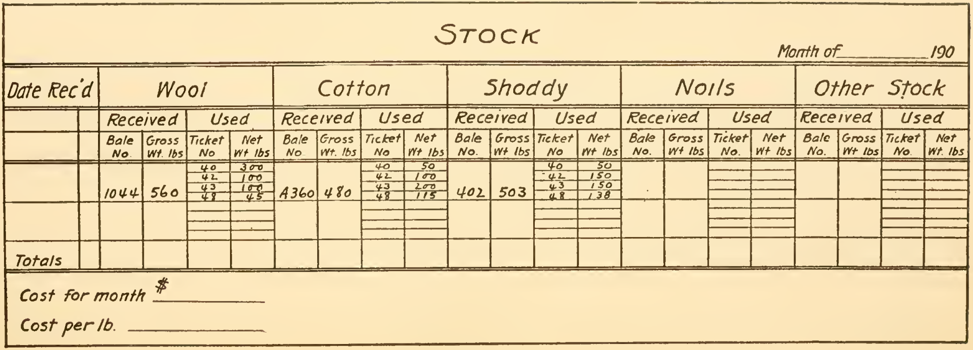


Payroll

Week ending__________190 .

Name	S	M	T	W	T	F	S	Total Hours	Rate per hr.	Amount	Total
Stock Room											
John Robinson		10½	10½	10½	10½	10½	7½	60	20	12 00	
Fred Brown		10½	10½	-	10½	10½	7½	49½	20	9 90	21 90

FIG. 14



STOCK

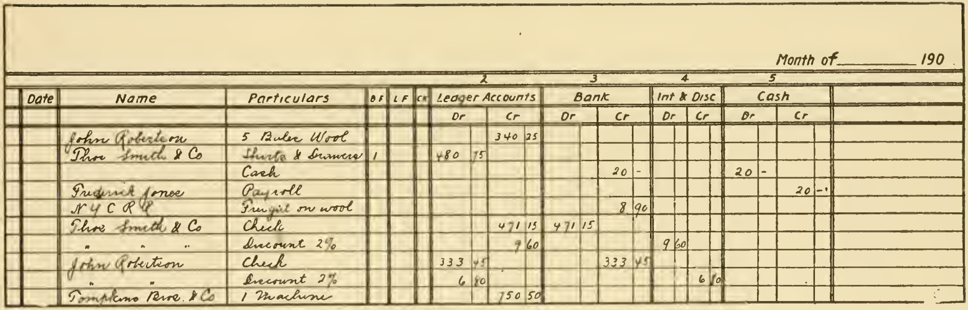
Month of __________ 190

Date Rec'd		Wool				Cotton				Shoddy				Noils				Other Stock			
		Received		Used		Received		Used		Received		Used		Received		Used		Received		Used	
		Bale No.	Gross Wt. lbs	Ticket No	Net Wt lbs	Bale No	Gross Wt. lbs	Ticket No	Net Wt lbs	Bale No.	Gross Wt lbs	Ticket No	Net Wt lbs	Bale No.	Gross Wt lbs	Ticket No.	Net Wt lbs	Bale No.	Gross Wt lbs	Ticket No.	Net Wt. lbs
		1044	560	40 42 43 48	300 100 100 45	A360	480	40 42 43 48	50 100 200 115	402	503	40 42 43 48	50 150 150 138								
Totals																					

Cost for month $ __________

Cost per lb. __________

FIG. 15



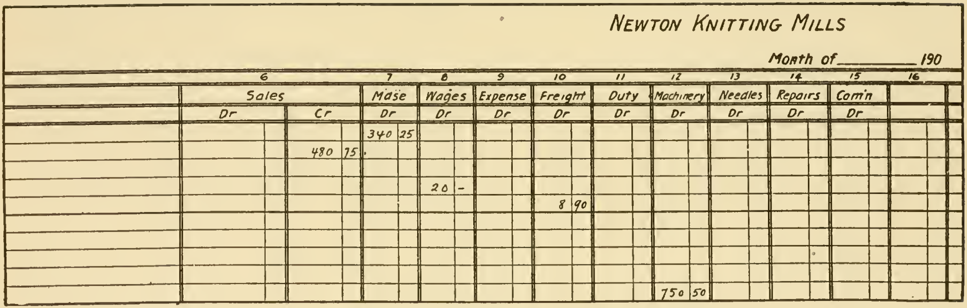
Month of __________ 190 .

						2		3		4		5	
Date	Name	Particulars	BF	LF	CR	Leager Accounts		Bank		Int & Disc		Cash	
						Dr	Cr	Dr	Cr	Dr	Cr	Dr	Cr
	John Robertson	5 Bales Wool					340 25						
	Thos Smith & Co	Shirts & Drawers	1			480 75							
		Cash							20 -			20 -	
	Frederick Jones	Payroll											20 -
	N Y C R R	Freight on wool							8 90				
	Thos Smith & Co	Check					471 15	471 15					
	" " "	Discount 2%					9 60			9 60			
	John Robertson	Check				333 45			333 45				
	" "	Discount 2%				6 80					6 80		
	Tompkins Bros. & Co	1 Machine					750 50						

FIG. 16

and the average cost per pound or dozen entered in the respective column.

Fig. 18 is an invoice form, which can be made in duplicate or triplicate as required by the use of carbon paper. If made out in triplicate one copy is sent to the customer, another to the commission agent and the third kept on a loose-leaf file, making a complete sales book in detail. If used in this way no separate sales or day book is required. The amounts of the invoices can be posted direct to ledger accounts on Fig. 16. This avoids all mistakes, which are usually made when an invoice is copied or charged in a day book, besides saving the extra labor of copying, the triplicate invoice being made at one writing. They should be numbered in rotation in corner under binder folio. This number is entered in the column BF, Fig. 16. This binder folio number is entered in the general ledger so that the entries in the ledger will refer back direct to the details of the invoice. Figs. 16 and 17 are for a system of double-entry bookkeeping in a knitting mill and can be used with the other forms to ascertain the average fixed charges and expenses outside the labor cost. This system combines the cash, day book and journal in one book and practically does away with the two last named books and saves considerable labor. It is necessary to have a corresponding credit entry for every debit entry, and a debit entry for every corresponding credit entry. It is easy to classify the different accounts under different

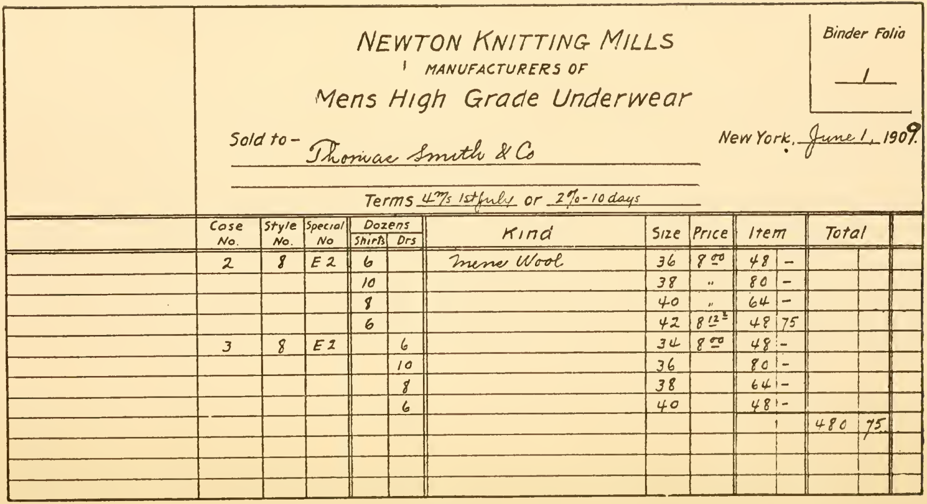


NEWTON KNITTING MILLS

Month of ________ 190

	6		7	8	9	10	11	12	13	14	15	16
	Sales		Mdse	Wages	Expense	Freight	Duty	Machinery	Needles	Repairs	Com'n	
	Dr	Cr	Dr	Dr	Dr	Dr	Dr	Dr	Dr	Dr	Dr	
			340 25									
		480 75										
				20 –								
						8 90						
								750 50				

FIG. 17



NEWTON KNITTING MILLS
MANUFACTURERS OF
Mens High Grade Underwear

Binder Folio
1

Sold to- Thomas Smith & Co

New York, June 1, 1909.

Terms 4 m/s 1st July or 2% - 10 days

	Case No.	Style No.	Special No	Dozens		Kind	Size	Price	Item		Total		
				Shirts	Drs								
	2	8	E 2	6		Mens Wool	36	8 00	48	–			
				10			38	"	80	–			
				8			40	"	64	–			
				6			42	8 12½	48	75			
	3	8	E 2		6		34	8 00	48	–			
					10		36		80	–			
					8		38		64	–			
					6		40		48	–			
											480	75	

FIG. 18

headings as desired. As shown at Fig. 17, column 16 has a blank heading. Several of these can be left in the book for any new headings that may be required. Both sides of the book are required for Figs. 16 and 17 as shown. The debits and credits of each account are side by side, and the abbreviated terms, Dr. and Cr., are not written with every entry as in the old method of day book and journal.

As shown at Fig. 16 the mill has bought of John Robertson five bales of wool, the invoice amounting to $340.25. John Robertson is credited with the amount in column 2. All materials which enter into the manufacture of underwear are generally classed under one heading, as merchandise, column 7. We debit merchandise account with it, but here again raw material or stock may have a separate heading if so desired.

The second entry to Thomas Smith & Co. is for goods shipped to them. This item is taken from Fig. 18, the customer being debited and the sales credited. The mill keeps a bank account, but will require cash in the office for small payments or for payments on account of wages. The third entry is cash drawn from the bank, the bank credited and cash debited. The fourth entry is for wages paid to Frederick Jones. Cash is credited and wages debited.

When the pay roll is made up and the total amount ascertained, the correct amount can be drawn from the bank, the bank credited and the wages debited. The fifth entry is for a check to New York Central Railway Co. for freight on wool. The bank is credited and freight is debited.

This system saves the posting of many single items in one account in the ledger. The totals at the end of the month for each of the separate accounts are posted in the ledger in one amount.

Esek Easton.

Wage Systems and Defective Work

We are about to make a change in our methods of paying piece work for knitting and looping. We have a number of girls doing excellent work and some few who persist in turning out their work in a slipshod way, careless of the menders they make. We had thought of the premium plan, charging the operatives for all menders and paying a premium to those who do good work and keep their menders under a certain percentage. We would like to know what is a fair average of menders for the knitter and topper on 176 and 200-needle cotton goods, and for the loopers on a 16 and 18-point looper with the same class of work. There is considerable competition in this place and at times good help is scarce. If you can give us this information we would very much appreciate it.

Milton (1142).

This is the same trouble that all manufacturers have in starting a new mill. The premium idea is a good one if not carried too far. While it serves as an inducement for the help to do good work, still it establishes a precedent and it will be found necessary to offer premiums every time you wish something done. I have found it a better scheme to pay a good price per dozen and charge them up with all bad work due to carelessness over and above a certain percentage.

We must have in mind that looping is the most difficult operation in the manufacture of hosiery. It is much more difficult than picking on ribbed tops, as the stiches are much finer and tighter, and the operator has no slack course to follow as in the ribbed top. In breaking in new help for looping I have found it a good plan to take experienced pick-on girls or toppers, as they are commonly called, and teach them to loop. As the operation is very similar to topping, I find they learn it much more readily than a new girl.

It seems a shame to spoil the work in the last operation. In order to avoid this we should, as far as possible, avoid the use of new help in the looping department. The new help can be used for toppers, in turn using the toppers for loopers.

The amount of bad work usually made by toppers and knitters and loopers on 176 and 200-needle work depends largely upon the class of goods being manufactured. For example, there would be considerable more mending on single thread work than on double thread. The mending on this class of work will range from 5 to 8 per cent., according to conditions. The menders in the knitting department should not run over 3 per cent., about evenly divided between the toppers and the knitters. In the looping department, the mending should not run over 2 per cent. If the seconds are held down to about 5 per cent. in a mill manufacturing this class of goods, it is considered good work. Above 8 per cent. is considered poor work. In a new mill the mending is sure to run considerably above this figure. In some cases I have known it to run as high as 16 per cent. From my own experience I have found it an excellent plan to have inspectors and menders in each department and have the work all inspected and carefully mended before being passed on to the next department. In this way it enables the foreman of each department to see how the work is coming along. It also gives him an opportunity to show the operators their work. If the goods are mended before leaving the knitting department they pass as perfect. If they are sent into the other departments without first being mended they become so defective by the handling that they are unfit for use and are made into seconds. This plan necessitates extra handling, but I have found that it pays in the end, as a stitch in time saves nine.

Weehawken.

Cost Estimates for an Underwear Mill

I would like a simple but sure method for determining the cost of underwear. I have records of what different lines of goods have cost us for material and labor for a number of years, but have not added in the fixed charges. I would like to have you give me an estimate of fixed charges and estimates of fleeced lined and light weight underwear. Jackson (1780).

A cost estimate in a manufacturing business must be divided into several calculations. First, there are the fixed charges, based on the production per day.

Estimate 1: If the average daily production of the mill falls below the estimated quantity, the cost per dozen is increased, but if the production is above, then it is reduced.

Should the production be 200 dozen per day, the cost would not be doubled. One superintendent or manager would be required in either case. The boss knitter would answer for 100 dozen, but he would require an assistant for 200 dozen.

The same remarks apply to the forewoman, sewing machine fixer and shipper, but in the case of the engineer and watchman, one each would do in either case.

The cost of coal would be increased, as would also the oil, repairs and incidental expenses.

The rent or interest on the building would be more, unless the building was large enough to produce the double quantity.

The cost for insurance, interest on working capital would also be increased, but not doubled.

Estimate 2: This is based on fleece lined underwear, requiring 14 pounds of yarn to the dozen. It is an estimate on piece work prices paid to the help. As they are figured on the cost per dozen, the amount would not be affected by the daily production, but remains the same, whether for 100 or 200 dozen per day.

The figures are based on good wages for the help, such as are paid in all knitting mills in New York State at this time.

I have taken the prices for finishing to be from 10 to 12 cents for shirts and from 18 to 25 cents for drawers, because this item varies with the finish, the more elaborate style requiring more time and higher price. The price for covering also varies. In some cases all the seams are covered and in others only those at the shoulders and arm holes of the shirts, and the gussets and up the back seam of the drawers. The price given is for partial covering.

Estimate 3 is for all materials except yarn. The cost for boxes varies because in some goods they are packed 1 dozen in a box, and in others only ½ dozen, making 2 boxes per dozen.

The cost for trimmings depends upon the quality and cost of material used for finishing, and therefore each separate style must be calculated differently. The cost for buttons also depends upon the quality of the button. The cost for cases depends upon how bulky the goods are. Fleece lined underwear being very bulky, the cost per dozen is greater than for light weight underwear.

To the items already given must be added the cost for yarn. To ascertain the quantity required, carefully weigh all the bobbins of yarn put on the knitting machine in knitting a roll of cloth, and to this add the weight of the waste in winding the yarn on the knitting bobbins.

After the roll of cloth has been washed and dried, have it taken to the cutting room and cut into equal quantities of shirts and drawers, including sleeves and gussets. A simple division will then give the amount of yarn required for a dozen of goods. An allowance for the waste cloth made in cutting can be made on the basis of the price that can be obtained for the clippings, or this can be omitted from the calculation and allowed to remain as an item of profit.

I have not included in the estimates the capital invested in machinery, which for 100 dozen per day would cost about $15,000. Some manufacturers include the interest and depreciation on machinery in their fixed charges; others leave it out in their cost calculations and deduct the depreciation from the gross profits at the end of the year, leaving the item of interest on capital invested in machinery to be paid by a dividend on the capital stock from the net profits.

From the foregoing it will be seen that it is difficult to prepare an exact estimate of costs, without being in possession of all the numerous details.

Among the things to be taken into consideration are the following: Whether the power is water or steam. Whether the building is a cheap frame or a substantial brick or cement construction. Whether the machinery used is the latest or second-hand. Whether the capital stock is large enough to supply working capital as well as the amount invested in the machinery and building. Whether the help to be obtained is experienced or green hands that will have to be trained. The weight of the goods. The quality of the materials used in finishing.

Estimate 4: This is for the piece work cost per dozen on light weight underwear requiring 3 pounds of yarn to the dozen.

The cost per dozen is considerably reduced on several items as compared with estimate 2 on fleece lined underwear.

To this estimate must be added the estimates for materials, yarn and fixed charges as already given.

Knowing the special conditions and with the assistance of these estimates, a knit goods manufacturer should be able to estimate closely the cost of manufacturing fleece lined and light weight underwear.

Estimate No. 1. — Fixed Charges (based on 100 dozens per day).

	per doz.
Superintendent or manager	.05
Bookkeeper	.02
Boss knitter	.04
Forelady.....................	.02
Sewing machine fixer	.03
Engineer and Fireman	.025
Shipper	.015

	Per doz.
Watchman	.015
Coal	.03
Oil and repairs	.02
Needles	.04
Freight and Cartage	.01
Taxes	.005
Stationery and Stamps	.015
Building, say $10,000, 6 per cent. interest as rent	.02
Insurance	.025
Interest on working capital, say 5 per cent. on $60,000 for 6 months	.05

Estimate No. 2. — Fleeced lined underwear, taking 14 lbs. of yarn to the dozen.

Piecework cost	per doz.
Winding yarn	.09
Knitting	.07
Drying	.03
Cutting	.05
Checking	.005
Seaming	.07
Covering	.05
Trimming (cutting out for neck in shirts and across top of drawers)	.01
Finishing, shirts	.10 - .12
Finishing, drawers	.18 - .25
Button-holing	.015
Button sewing	.015
Eyeletting and lacing	.005
Stamping	.005
Folding in and pressing	.035
Folding out and inspecting	.03
Boxing	.01
Commission for selling, 5 per cent. on selling price	

Estimate No. 3. — Materials (except yarn).

	per doz.
Boxes to hold ½ dozen	.05
Trimmings	.10-.25
Thread	.035
Eyelets and laces	.02
Buttons	.12-.20
Cases	.04-.06

Estimate No. 4. — Light Weight Underwear Based on goods taking 3 lbs. of yarn a dozen.

Piecework cost	per doz.
Winding yarn	.035
Knitting	.03
Drying	.015
Cutting	.025
Checking	.005
Seaming	.07
Covering	.05
Trimming (cutting out for neck of shirts and across top of drawers)	.01
Finishing, shirts	.10-.12
Finishing, drawers	.18-.25
Button-holing	.015
Button sewing	.015
Eyeletting and lacing (drawers only)	.01
Stamping	.01
Folding in	.02
Pressing	.015
Folding out and inspecting..	.025
Boxing	.005

N. B. Y.

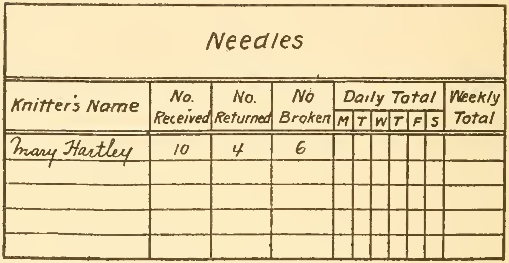
Forms Used for Reports of Departments in a Knitting Mill

I am informed that you can give me the forms necessary to keep information of the

rooms in a knitting mill to determine the condition of the room and what hosiery costs us. We do not know where we are at until the inventory is taken at the end of the quarter.
Lewis (1780).

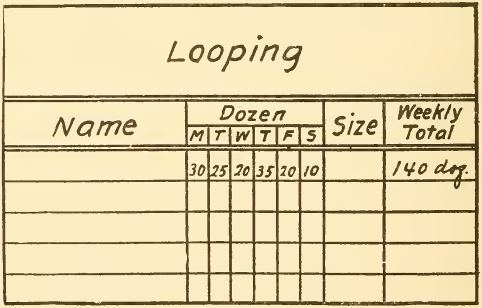
Several years ago, before we adopted our present method of calculating the cost of our goods, we did not know "where we were at." The cost in some of our departments was twice as much as the estimate. Under such conditions it was impossible to fix the prices of our goods with any assurance that they would return a profit. By our present system, however, we have found the estimated cost to run very close to the actual as determined by the accounts for the year made up after taking an inventory. Our difficulty now arises from the fact that some of our competitors apparently do not know "where they are at," judging from the low prices they put on their product. This demoralizes the markets and results in loss to us. It is, therefore, from a not entirely unselfish motive that I propose to give our competitors, through the Textile World Record, an account of our method of estimating cost.

We will assume that the goods are 1½-pound average misses' rib; selling price, $1.00 less 10 per cent. commission and 2 per cent. discount. This leaves 88 cents for manufacturing and profits. A run of four weeks will give a fair average of the daily production of firsts, seconds, roughs, waste, broken needles, loss for stoppage for broken belts, machines out of commission for want of repairs, and all the other unforeseen things that happen in the best of mills. We first take the cost for buildings, machinery, etc., at $40,000. The allowance on this must be enough to pay for repairs to the building, wear and tear of the machinery and interest, say 10 per cent. a year. This may appear high



Needles

Knitter's Name	No. Received	No. Returned	No Broken	Daily Total M	T	W	T	F	S	Weekly Total
Mary Hartley	10	4	6							



Looping

Name	Dozen M	T	W	T	F	S	Size	Weekly Total
	30	25	20	35	20	10		140 doz.

Knitting Report

Week ending Jan. 19 1907.

Day	Yarn in Stock	Yarn Recd	Ribbers								Knitters or Footers								Ribbers								Knitters								Firsts	Seconds or Menders	Total
			Doz Knit - Sizes								Doz Knit - Sizes								Lbs Knit - Sizes								Lbs Knit - Sizes								Doz	Doz	Doz.
			5	5½	6	6½	7	7½	8	9	5	5½	6	6½	7	7½	8	9	5	5½	6	6½	7	7½	8	9	5	5½	6	6½	7	7½	8	9			
Mon	40 lbs	418 lbs	8		40	6			9		10	2		18		60		25			10		60		100	90		8	20		60		74	100	297	15	312
Tues																																					
Wed																																					
Thur																																					
Fri.																																					
Sat.																																					
Total																																					
Cost per Doz.			4^2		4^3				7																												

To be returned daily after inspection

Must be in Supt's Office not later than 9 o'clock each morning to some manufacturers, but 6 per cent. must be allowed for money invested on buildings, and machinery, etc. As the life of a machine is but ten years, 4 per cent. is not too high for wear and tear of machinery. If the machines are in good shape at the end of the ten years so much the better for the manufacturer.

The following statement shows the various items of cost for a period of 4 weeks:

		Fixed Charges
Interest and depreciation, 10 per cent. on $40,000 per year		$307.69
Steam:		
Engineer and fireman	$48.00	
Watchman	36.00	
60 tons coal, $2.00	120.00	
		204.00
Superintendent		200.00
Bookkeeper		48.00
Office supplies		10.00
Knitter		72.00
Forewoman		30.00
Dyer		72.00
Teamster		40.00
House		18.00
Insurance		50.00
Finisher		60.00
Total fixed charges		$1,111.69
Add 10 per cent.		111.17
		$1,222.86
Wages:		
Machinist	$48.00	
Knitter's helper	40.00	
Ribbers	100.00	
Amount forward	$188.00	

Amount brought forward		$1,222.86
Amount forward	$188.00	
Knitting and setting on	432.00	
Loopers	216.00	
Examiner	16.00	
Menders	77.00	
Dyehouse help	36.00	
Boarding	108.00	
Finishing room	73.60	
Helper	30.00	
		$1,176.60
Material and Supplies:		
Yarns	$2,360.00	
Needles	25.00	
Belts	20.00	
Lights	6.00	
Pasteboard boxes	216.00	
Cases	43.20	
Bands and tables	30.00	
Dyes, etc.	288.00	
Freight	56.70	
		$3,054.90
Total cost 7,200 dozen		$5,454.36

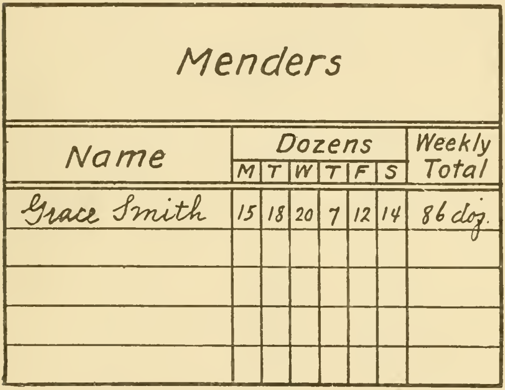
The average cost for one month's production is consequently 75¾ cents per dozen. There are 5 dozen of seconds to each 100 dozen manufactured, or 360 dozen a month, leaving 6,840 dozen firsts. The firsts sell at $1.00 a dozen less 10 per cent. commission and 2 per cent. to the customer, or 12 per cent. on the selling price. The seconds sell at 85 cents a dozen less 10 and 2 per cent. The 6,840 dozen at $1.00, less the 12 per cent. for commission and discount, gives a total of $6,029.20. The 360

Dyehouse Report

Week ending Jan. 19 1907.

Day	Goods	Blue Dye	Aniline Salt	Soda	Blue Stone	Chrome	Oil of Vitrol	Oil	Soap	Soda	Labor	
											Hrs.	Rate
Mon.	100 lbs	1 lb	8 lbs	2½ lbs	1 lb	2½ lbs	2½ lbs	1 qt	2 lbs	3 lbs	11¾	15¢
Tues.												
Wed												
Thur.												
Fri.												
Sat.												
Weekly Total												

dozen seconds at 85 cents a dozen, less the commission and discount, gives a total of $269.28, a grand total of $6,298.48. The cost for manufacturing is $5,454.36, leaving a profit of $844.12 on 7200 dozen for one month's work, or 11 72-100 cents a dozen.



Menders							
Name	Dozens						Weekly Total
	M	T	W	T	F	S	
Grace Smith	15	18	20	7	12	14	86 doz.

We now begin the daily account. We burn in 7 days 15 tons of coal. This must be divided by 6, giving 2¾ tons per day. We have two pockets each holding eleven tons, or enough coal for four days. This helps our engineer to determine how much coal he is burning.

We send the yarn to the knitter from the stock room, 471 pounds for hose and 10½ pounds for splicing yarn, for the day's run. The knitter reports how many dozens knit and the

Shipping Room Report

Received						Shipped					
From	Date	Grade	Wt.	Case	Route	Consignee	City	State	Kind	Case	Route
Smith	Jan. 3	1/10 Yarn	600 lbs	1,000	L.V.R.R.	Jones	New York	N.Y.	Hosiery	127	P.R.R.

To be returned daily after inspection

Must be in Supt's Office not later than 9 o'clock each morning.

Finishing

Day	No. of Girls	Hours	Rate		Total		Dozens Paired									Doz		
							Sizes								Total	S		
							5	5½	6	6½	7	7½	8	9		5	5½	6
Mon.	4	40	0	07	2	80	4	20	8	8	10	10	20	20	100			
Tues.																		
Wed.																		
Thur.																		
Fri.																		
Sat.																		
Weekly Total																		

Report

Week ending Jan. 19 1907.

ded		Dozs. Stamped & Boxed									Dozens Shipped								
		Sizes								Total	Sizes								Total
9	Total	5	5½	6	6½	7	7½	8	9		5	5½	6	6½	7	7½	8	9	

weight of the goods. Here we find the difference between the yarn sent to him and the weight of the goods received, also how much yarn he has in stock, if any.

Boarding Room

Name	Day	Sizes — Dozens											Daily Total
		5	5½	6	6½	7	7½	8	8½	9	9½	10	
Wm White	Mon.	10	5	11				50			20		96
	Tues.												
	Wed.												
	Thur.												
	Fri.												
	Sat												
Weekly Total													

Looping and mending are piece work. From the looping and mending the goods are sent to the dye house in lots of 100 pounds each. Each lot requires:

8 lbs. aniline salts at 10c.	$0.80
2½ lbs. chlorate of soda at 10c.	.25
1 lb. bluestone	.06
If a blue bottom is put on it will take 1 lb. of dye at	.70
5 lbs. bichromate of soda at 6½c.	.32½
3 lbs. oil of vitriol at 1 per cent.	.04½
1 qt. olive oil	.20
3 lbs. sal soda	.03
2 lbs. soap at 5c.	.10
Total per 100 lbs.	$2.51

or 3¼ cents a dozen.

Pay-roll Sheet

Two Weeks Ending	Knitting Overseer	Watchman & Fireman	Ribbers	Cutters	Examiners	Knitters	Loopers	Toppers & Ravelers	Menders	Machinist	Teamster	Dyehouse	Boarding	Finishing	Pressing	Shipping	Bookeeper	Supt.	Total Doz. Knit.
June 8	48.00	30.00	27.00	10.00	10.00	187.00	195.00	15.00	60.00	36.34	22.00	56.00	90.00	65.00	22.00	21.00	24.00	100.00	3.500
" 22	48.00	30.00	27.00	24.00	10.00	170.00	84.00	18.00	72.00	34.00	22.00	52.00	81.00	72.00	15.00	22.00	24.00	100.00	3.600

Pay-roll Average Sheet

Two Weeks Ending	Knitting Overseer	Watchman & Fireman	Ribbers	Cutters	Examiners	Knitters	Loopers	Toppers & Ravelers	Menders	Machinist	Teamster	Dyehouse	Boarding	Finishing	Pressing	Shipping	Bookeeper	Supt	Total Average
June 8	1.37	0.857	0.786	0.286	0.286	5.34													

Office Sheet Daily Report

From Jan. 2 1907 to Jan. 15 1907.

Day	Dozens Knit in Sizes											Dozens Shipped in Sizes										
	5	5^2	6	6^2	7	7^2	8	8^2	9	9^2	Total Doz.	5	5^2	6	6^2	7	7^2	8	8^2	9	9^2	Total Doz
Monday	10		20		40			100		90	260	10	10	10	20	10	10	40	40	10	12	172
Tuesday		40	80	40		30	10		70	10	280	10	60	20	5	90	10	30	40	40	10	315
Wednesday																						
Thursday																						
Friday																						
Saturday																						
Monday																						
Tuesday																						
Wednesday																						
Thursday																						
Friday																						
Saturday																						
Total Doz. Sizes																						

The boarding is piece work and under the control of the finisher. It is left to him to get the goods out of the boarding room — 300 dozen per day as his report will show.

In the finishing room the daily production will vary widely as some days there will be over 500 dozen shipped and the next day but 200 dozen, but for the month it will average the 300 dozen per day. The finisher reports how many dozens are shipped each day, how many dozens paired, folded, stamped, and boxed, and what sizes he is short of. The accompanying report sheets can be used and handed each day to the superintendent for inspection. By keeping track of these reports he can tell each day the average production and cost. Ravenswood.

Estimating the Cost of Hosiery in a Mill with Yarn Plant

It is part of my work to estimate the cost of our hosiery and I am looking for forms and report blanks to be used in the different departments to give the supplies used, the production, and to keep track of the waste made. I also want record sheet and cost sheet combined. Morcombe (1793).

To estimate the cost of manufacturing accurately and intelligently is of vast importance to every mill. It is essential that every article used extensively in the process of manufacturing should have a separate account, such as oil, paper, boxes, nails, twine, needles, machine supplies for carding, spinning, winding and knitting rooms, yarn and raw stock, soap, dyes,

Coal Report, week ending................................., 19....

	DUST	SOFT
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Sunday		
Total		

REMARKS:...

....

....

ENGINEER

FIG. 1

lighting, coal, water rates, labor, repairs, freight and express, insurance, cases, taxes, rent, printing, office supplies, etc. This may seem to be making too many accounts, but it should be remembered that in finding the cost of stockings per dozen all these things have to be taken into consideration.

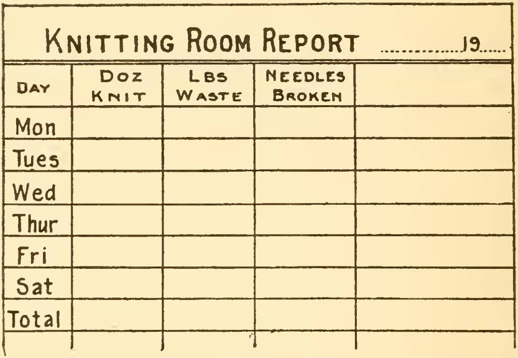
For example, if the machinery supply account should be kept as a general account and should run high one month it would be difficult to determine in which room this cost increased, and it would be necessary to check up each item to locate the cause. In keeping accounts for each room the location of this cause can be determined easily and the foreman in charge of the room notified that the expenses of his room are too high.

LAPPER ROOM REPORT ....19.....

DAY	BALES OPENED	TOTAL LBS	TARE LBS	LBS WASTE	
Mon					
Tues					
Wed					
Thur					
Fri					
Sat					
Total					

FIG. 2

The coal account cannot be watched too carefully. It is a good plan for the fireman to weigh his coal every day, and in most mills he has plenty of time for this work. I have seen this plan tried with good results, and the coal bill reduced one-eighth. The scales can be sunk in the floor of the boiler room. The weight of the coal for each day should be put on the report card, Fig. 1, and the report sent to the office once a week. When the engineer is required to send these reports to the office he will do his best to make the quantity of coal consumed as small as possible. This is a large item in the cost per dozen.



Knitting Room Report ....19......

Day	Doz Knit	Lbs Waste	Needles Broken	
Mon				
Tues				
Wed				
Thur				
Fri				
Sat				
Total				

Fig. 3

Economy in buying and using supplies is very essential. A system that will increase the care and attention of the employes and insure a saving is very important. The orders for supplies should be placed by one person. It is hardly necessary to say that goods received should be checked up with the bill. A strict account of the needles

Week Ending	Lapper Room Waste	Card Room Waste	Spinning Room Waste	Winding Room Waste	Knitting Room Waste	Doz Knit	Ave per Doz
1/12							
1/19							
1/26							
Total							

Fig. 4

should be kept, as they form a large item of cost. Some mills keep them locked in a store room. One box is given out at a time and charged in the supply book, which will be explained later. It is a good plan to place a restriction on each girl for needle breakage, allowing her to break a certain number and charging for all used above that number. Of course there are times when one must be lenient, as when bad yarn comes through and a general breakage occurs, which will happen in the best of mills.

Then there are such things as packing for engine and boilers, oil, brooms, and small articles. These should be locked in a room so that a record of the amount delivered can be made and the stock on hand determined from the book. If the supplies are taken directly to each room they are scattered around and not taken care of.

Waste is easily made and hard to prevent in a knitting mill, and is always a source of heavy loss. Great care should be taken in the various processes through which the cotton passes to the finished product to keep the waste account of each room as low as possible. It costs as much for labor for a pound of waste as it does for a pound of good material. The waste made by different mills varies widely and each manufacturer must find out the amount of his own waste and then see if it cannot be cut down. The style of machine and the class of goods and yarn have a bearing on the amount of waste made. The vigilance of the foreman plays an important part in the waste account. For instance, a lapper in some mills will throw out more good cotton than another and the duster will not do its work as well in some mills as in others. Inattention to these things is a cause of the waste account running up. A record of the waste made should be sent to the office once a week. Fig. 2 is a suggestion for waste reports. The total amount of waste that cannot possibly be used again, divided by the production for the same length of time, will give the amount of waste per dozen. This amount must be added to the weight of a dozen stockings in their finished condition to find the total amount of stock used for each dozen. Fig. 3 shows the waste and broken needle report for the knitting room. Fig. 4 shows a form of waste book for office use. The reports sent to the office are copied in this book.

The next important item of expense is the labor account. In some mills the piece system is used, and this is the best way to pay labor as it brings out the best in every person. The next best system is to pay by the day and have a fixed amount that each girl must do; if she does more she receives a premium. For instance, a girl is to do ten dozen of stockings to earn one dollar a day, and if at the end ot the week she has done eighty dozen she receives a proportionate advance for the twenty dozen. If the week's work amounts to forty dozen a proportionate reduction is made in the wages.

The total amount paid for labor gives the cost of labor per dozen. This should be compared with the estimated cost per dozen. An increase in production always results in a decrease in cost. The labor cost per dozen for each pay roll period should be kept in a separate book so that at the end of the year the average cost per dozen can be obtained and compared with the estimated cost. The cost of all supplies and fixed charges and other like expenses should be entered in the cost book, Fig. 5, each month. The total cost of these items, divided by the

ITEM	1906 JAN	1906 FEB	1906 MCH	1906 APRIL	1906 MAY	1906 JUNE
Dye						
Needles						
Oil						
Twine						
Nails						
Belting						
Thread						
Sundry Supplies						
Repairs						
Expense						
Freight						
Taxes						
Insurance						
Printing						
Travel						
Office supplies						
Rent						
Express						
Interest						
Storage						
Sundries						
Machine parts						
Total						
Doz produces						
Cost per doz						

FIG. 5

dozen produced, will give the cost per dozen for fixed charges and supplies. A detailed record should be kept for each style, the method of manufacture, weight, color, etc. A form of record sheet and cost sheet combined is given at Fig. 6. Benjamin Schoolcraft.

Sample Record and Cost Sheet

Style No....................	Estimated product.............
Color	Weight per doz. ....
Weight yarn.................	Number of threads.............
Number of needles............	Boxes, kind ....
Number yarn in top...........	Number yarn in foot... ....
Color top....................	Color foot....................

Color heel and toe..
Stock, Cost per doz...
Labor “ “ ....
Cases ....
Coal “ “ ....
Paper boxes ....
Seconds, Cost per doz...................................
Selling “ “ ....
Incidental expense “ ....
Fixed charges and supplies, Cost per doz.......................
Total cost ....
Selling price less discount ....
Profit ....

Fig. 6

Benjamin Schoolcraft.

Estimating the Cost of Knit Underwear

I am working out a cost system to fit the conditions in our mill, and would ask you to give me a form illustrating the items which enter into an estimate of the cost of underwear.

Bond (1807).

Estimates of the cost of knit underwear should be based on the spun yarn as raw material, leaving the cost of the yarn to be determined separately, either from the invoices when the yarn is bought, or by separate estimates when the yarn is spun in the mill where the knit goods are made.

About 10 per cent. should be allowed for knit, spun and other waste between the spun yarn and the finished goods. All piece work should be separated from the other charges and added to the cost of the yarn. Then the day labor and the general charges should be divided by the production in dozens; the average cost thus obtained added to the amount already estimated. The cost per dozen for trimmings can be easily calculated by measuring the amount of trimmings used. The buttons are calculated by count; the thread, by weight. The other fixed charges, which must be averaged on the general production, include those for boxes, cases, freight, cartage, rent, fuel, taxes, insurance, light, water, etc. The average for these charges is obtained, as in the case of the general charges for day labor, by dividing the total amount by the number of dozen produced. Ten per cent.

ESTIMATE BLANK

STYLE....................
KIND OF YARN..........

PRICE PER LB............
WEIGHT PER DOZ. ......
(Including 10% for waste.)

PIECE LABOR	DAY LABOR	EXPENSES	MATERIALS	FOOTING
Cutting	Knitting	Rent	Stock	Piece labor
Marking	Winding	Power	Trimmings	Day labor
Looping	Pressing	Heat	Buttons	Expenses
Seaming	Boxing	Water	Thread	Materials
Covering	Overseers	Lights	Boxes	TOTAL
Boarding	(Other day hands)	Freight	Cases	Add 10% for Incidentals (Postage, Stationery, Losses, Breakage, etc.)
Trimming		Cartage		
Finishing		Ins. & Tax		
Button, hole		Interest		
Button, sew				
Inspect				
TOTAL	TOTAL	TOTAL	TOTAL	TOTAL COST
	Divide total by average production	Divide total by average production		REMARKS:
	......doz.	......doz.		
	per day $......	per day $......		
	Cost of day labor per doz.	Expenses per doz.		

of the total estimate should be added for incidental expenses such as stationery, postage, loss, repairs, etc.

By deducting the trade discount and the commission from the selling price the net yield of the goods to the mill is found, and the difference between that and the estimated cost gives the estimated profit.

A blank for estimating the cost of underwear is shown in the accompanying illustration. The items would have to be changed to suit the requirements of different mills and different kinds of goods. Those given are for spring needle work. Daniel Lighthill.

Cost of Manufacturing Women's Hosiery

Is it possible to make ladies' 176-needle hose at sixty-five cents a dozen so to yield a profit to the manufacturer? Henderson (1798).

The cost of manufacturing this grade of goods depends largely upon the location. It is a well known fact that Southern mills have a great advantage over their Northern competitors on the cheaper grades of hosiery owing to the cheap labor which is available in the South. Especially does this hold true in ladies' plain knit coarse and medium gauge hosiery as this grade of work requires no great amount of skill on the part of the workers. On first thought one might be led to believe that owing to the cheapness of labor and also to its being the center of the cotton growing industry the South would naturally be the most advantageous location for the manufacture of hosiery. However, such is not the case for the reason that there are certain grades of hosiery which require skilled help for their successful manufacture, and the class of help available throughout the Southern States does not seem to be able to reach that degree of perfection which is required for the successful manufacture of high grade hosiery such as fine ribbed and full fashioned goods. For this reason we find a large majority of the Southern manufacturers confining their efforts to the manufacture of men's coarse half hose, coarse ribbed goods and ladies' plain knit seamless goods. And in this line of goods they certainly have a great advantage over the manufacturers throughout the East and Middle West. It might be possible for a Southern mill to manufacture such a hose as the sample sent me, at 65 cents per dozen, but the margin of profit would be very small. However, I do not hesitate to say that the goods cannot be manufactured in the Northern mills at a profit at 65 cents per dozen. In order to prove my assertion I am going to give the absolute cost of such a hose in our mill, and as our prices are practically the same as the prices generally paid throughout the East and Middle West I feel reasonably sure that I can show that the goods cannot be manufactured and sold at 65 cents per dozen at a profit. After carefully examining the sample sent me I find it to be made from 1-16 carded peeler yarn, and to weigh 1½ pounds per dozen. We are at the present time manufacturing a similar hose and I quote below the actual cost of these goods at the present time as follows:

Yarn, 1½ lbs.	$0.28
Waste, 3 oz.	.05
Knitting	.02
Cutting	.005
Turning (4 times)	.025
Looping	.04
Hemming	.015
Mending and inspecting	.02
Dyeing	.07
Forming	.03
Pressing	.015
Mating	.02
Stamping, ticketing, folding, tying, boxing	.015
Paper box	.02
Seconds	.03
Selling	.035
Superintendent and handling	.07
General or mill expense	.22
Total cost	$0.98

In the item superintending and handling is included the salaries of all the overseers and wages of all day workers throughout the mill. Also in the item general expense is included the following items of expense which must necessarily be included to obtain the exact cost of goods: Office salaries, depreciation and interest, taxes, repairs, profit and loss, insurance, discount, needles, lights, power, fuel, oil, office and general supplies, freight and express, advertising, miscellaneous items

The general expense in our mill as based on above items figures 22 cents per dozen. Of course it is possible to reduce this expense considerably in small mills, where no high salaries are paid, and where taxes are low and fuel cheap. However, if this item was to be cut in half and allowing only 11 cents per dozen as the general or mill expense (which is an extremely low figure for any mill), we still have the actual cost of goods at 87 cents per dozen.

There may also be other items of expense that might possibly be eliminated, such as selling expense, stamping, boxing, etc. But even with these items eliminated it would be impossible to reduce the cost below 80 cents per dozen.

From these figures I think I have shown conclusively that this grade of goods cannot be manufactured at a profit at 65 cents per dozen either throughout the East or Middle West. However, I do not wish to say that these goods were not manufactured in the East, as certain manufacturers have been accustomed to putting goods on the market at considerably below the actual cost of same to be used as a leader or rather a bait to induce customers to buy the other numbers in their line which show a good margin of profit. They figure that the customer can be made to believe that the prices on the whole line must also be right, and in this they are undoubtedly right, to some extent at least.

There are also other advantages to be derived in putting out a leader at a very low price at times, as it also helps to keep the machinery busy during the dull season, and prevents the accumulation of a large stock of the higher priced lines, thus doing away with the possibility of being forced to close down the mill indefinitely owing to overstock. It also lessens the general mill expense on all the goods as the more machines in operation the greater the production, and the greater the production the less the general expense per dozen and vice versa. So in this case these goods may have been put on the market as a leader, or the manufacturer may be overstocked and in order to reduce his stock has cut the price accordingly.

As a matter of fact there has been a great change in the hosiery industry in the past two or three years, inasmuch as the merchant has forced the manufacturer to carry the stock instead of carrying it himself as in former years. During the dull times we have experienced during the past two years, the merchant has been very cautious in placing his orders and has resorted to ordering his goods in small lots just as he wants them and reordering when his stock runs too low. In this way he has forced the manufacturers to carry a large stock in order to take care of these immediate orders, with the result that many manufacturers have accumulated a large stock which requires a large amount of capital, and some of the less favored manufacturers have been forced to reduce their prices in order to reduce their stock, or keep from shutting-down their plants indefinitely.

After careful consideration I arrived at the following conclusions, viz: First, that the goods in question were manufactured in the South by cheap labor, or second, that they are being sold below cost and used as a leader, or third, the manufacturer found it necessary to move the surplus stock regardless of cost, or fourth, that the manufacturer placing them on the market does not know what the goods actually cost him, and finally, that the goods cannot be manufactured under any conditions and sold at 65 cents per dozen at a profit.

Merrill.

Cost of 188-Needle Half Hose

We are very much interested in the reply by "Merrill" on the cost of 176-needle ladies' hose in your November issue. It seems to be very complete. We believe many mills get their mill expense too low and do not figure any waste whatever. We would like to have "Merrill" figure the cost on 188-needle half hose made of mercerized Sea Island yarn costing 70 cents per pound, goods weighing 1¼ pounds off the machine.

Cooper, Wells & Co.

The cost of any article will vary considerably, according to conditions in different mills. For example, the cost of labor may be much more in one locality than in another; or one mill may be better equipped than another. For this reason I will pay more attention to the system used for finding the cost than the exact cost of goods. I will give the exact cost, if I were to manufacture the goods at the mill where I am now and try to make the explanation of the system so clear that it can be applied to any mill.

I shall first enumerate the different items of cost and then take up each item separately and show how the exact cost of each item may best be obtained.

The different items in the cost of these goods are as follows:

Yarn, 1¼ lbs., 70c. per lb.	$0.875
Waste, 2 oz., 70c. per lb.	.0875
Knitting tops, 50c. per 100 doz.	.005
Cutting tops, 25c. per 100 doz.	.0025
Picking on tops, 8c. per doz.	.08
Transferring tops, 5c. per doz.	.05
Turning goods (4 times), 25c. per 100 doz.	.01
Looping, 4½c. per doz.	.045
Mending and inspecting, 2c. per doz.	.02
Dyeing, 4c. per lb.	.05
Forming, 2½c. per doz.	.025
Mating, 2c. per doz.	.02
Pressing, 1c. per doz.	.01
Stamping, ticketing, folding, tying and boxing, 1½c. per doz.	.015
Paper box, 2c.	.02
Seconds, 5 per cent.	.08
Superintending and handling, 7c.	.07
General or mill expense, 22c. per doz.	.22
Cost per doz., exclusive of selling	$1.685

This is the cost of goods in our mill. Of these items we shall class the following as fixed, and which require no explanation aside from the fact that they may differ from prices paid in other mills:

Yarn.
Knitting tops.
Cutting tops.
Picking on tops.
Transferring.
Turning.
Looping.
Mending and inspecting.
Forming.
Pressing.
Mating.
Dyeing.
Stamping, ticketing, folding, tying and boxing.

We have then the following items which will require some explanation and which I think are the most important items in figuring the exact costs, and also the items which most manufacturers overlook in their costs:

Waste.
Seconds.
Superintendence and handling.
General mill expense.
Selling.

Waste is a very important item, and I think but very few manufacturers know what it amounts to on the goods they manufacture. I have allowed 2 ounces per dozen for waste. As we do not manufacture an exact duplicate of the goods in question it was necessary for me to take from our line a style as near as possible to this one in order to make the tests. I feel sure, however, that the figures are as nearly correct as it is possible to make them. In determining the amount of waste per dozen on any given style I weigh from 300 to 1,000 pounds of yarn, knit it up and follow the goods all through the mill until they are ready to dye. I then weigh the goods and count the number of dozen. The difference in the weight of the yarn and the weight of the finished goods before dyeing represents the amount of waste. From this we can easily calculate the amount of waste per dozen. I have known manufacturers in making tests of this kind to weigh only the waste as it comes from the machines. I have found this to be unsatisfactory as usually some of the waste is omitted or mislaid. In the 2 ounces of waste which I have figured in this cost is included all ravelings from toppers and loopers and all other waste from start to finish.

I have allowed 5 per cent. for seconds. I have found this by actual test to be the average loss from seconds on goods of this grade. These figures may vary some in different mills, as the class of help and equipment of mill has much to do with the amount of seconds. In making the tests to determine the amount of seconds I take 1,000 dozen of the goods just as they come from the machines and follow them through the mill, marking all tags special. After the goods are all mated and boxed they are counted and the difference between the boxed goods and the 1,000 dozen which started from the knitting department represents the seconds. The seconds will usually average from 4 to 8 per cent. for the entire year. Anything below 6 per cent. is considered a good result.

Under the head of superintendence and handling is included all day workers throughout the mill, including superintendent, foreman, office help and machinists, but not including the salesman. To find the exact cost per ounce for this item it is necessary to take an entire year's business. Keep an account of the exact number of dozen manufactured during the year, also the amount paid to day workers during the same length of time. From these figures we can easily calculate the cost for superintending and handling per dozen. This item will vary in different mills. It runs much higher in small mills than in those with a large production.

We now come to the item of general mill expense. In this is included taxes, repairs, insurance, profit and loss, discount, needles, lights, power, fuel, oil, office supplies, advertising, freight, express, depreciation, interest, and miscellaneous expense. Of all the items in the cost of manufacturing any article, this is the most important and also the most difficult to estimate correctly. The only sure way in which to get the correct cost for this item is to figure on a year's production, as for superintending and handling. Very few manufacturers know what their mill expense actually is. If they did they would not wonder so much as to what became of the expected profits "which failed to materialize." This item is also subject to considerable variation according to conditions.

We now come to the selling expenses, which are not included in the cost of the goods, owing to the wide variation between different mills. Most mills selling direct, pay a certain percentage of the selling price for selling. In such cases the cost of same is easily found. In mills paying their salesmen straight salaries, the cost of selling may be included under superintending and handling, or may be figured separately, basing the calculation on a year's business. This practically completes the total cost of the goods. As I stated before, while this represents the exact cost of goods if we were to manufacture them in our mill, it is subject to considerable variation in other mills. By substituting the respective prices for mine the exact cost may be obtained for any given mill. Merrill.

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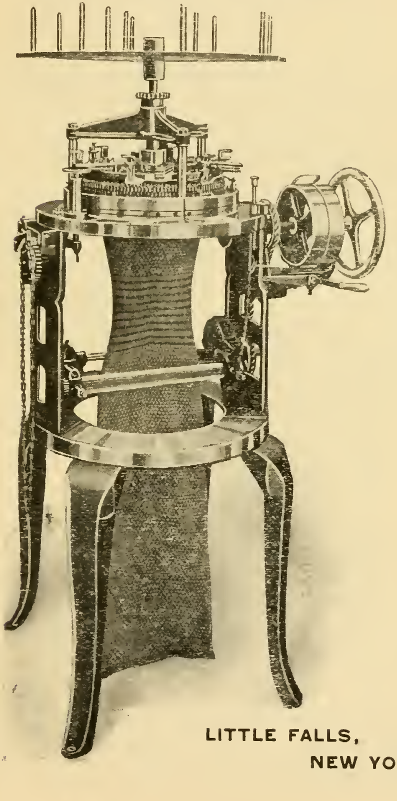

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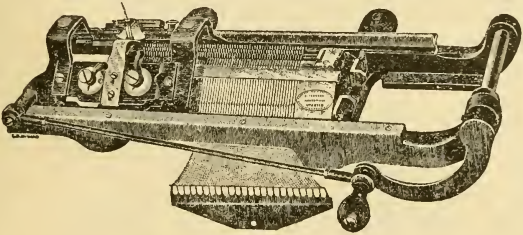

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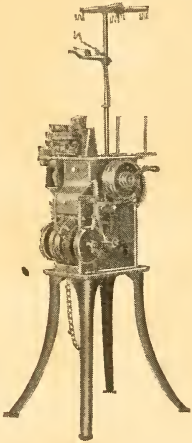

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